



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,973	11/24/2003	Wolfgang Singer	637.0012USX	5197

7590 08/01/2007  
CHARLES N.J. RUGGIERO, ESQ.  
OHLANDT, GREELEY, RUGGIERO & PERLE, L.L.P.  
10th FLOOR  
ONE LANDMARK SQUARE  
STAMFORD, CT 06901-2682

EXAMINER

GUTIERREZ, KEVIN C

ART UNIT PAPER NUMBER

2851

MAIL DATE DELIVERY MODE

08/01/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/720,973	<b>Applicant(s)</b> SINGER ET AL.	
	<b>Examiner</b> Kevin Gutierrez	<b>Art Unit</b> 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 27,30-32,34,35,37-42 and 47-56 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27,30-32,34,35,37-42 and 47-56 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection in view of different interpretation of previously applied prior art.

Regarding the remarks on pages 7-8, the Applicant states that neither of the Koch et al. patent nor the Nojima patent, where considered alone or in combination with one another, disclose or suggest a carrier that is moveable along a line in the x-direction, and a projection exposure system that scans a reticle plane in the y-direction. The Examiner respectfully disagrees. The Examiner relies on Koch et al. as the primary reference to disclose where a projection exposure system that scans a reticle plane in the y-direction. At col. 4, lines 59-67, where a reticle (25) is illuminated by the illumination system to project an image on to a substrate (28). It is inherent and well-known that in an EUV system such as Koch et al. where a reticle is scanned by a projection exposure system in at least one direction. As at least by suggestion of the drawings in figure 2 of Koch et al., the Examiner interprets the reticle (25) is in the x-y plane (where the x-direction is out of the page). Therefore, the reticle (25) is scanned in the up-down direction, which is the y-direction. Further, the Examiner relies on Nojima as a secondary reference and teaches a carrier that is moveable along a line in the x-direction, where an XYZ mechanism is utilized to move an optical element in the X, Y, or Z direction (col. 10, lines 18-20).

Therefore, the combination of the at least provided references disclose the claimed invention for at least the reasons stated in the rejection below.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 27, 30-31, 34-35, 37-42 and 47-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koch et al. (6,195,201) in view of Nojima (5,978,072).

Regarding claim 27, Koch et al. disclose "a plate (41; base;) having a plurality of raster elements (42; facets) situated thereon for directing a light beam having a wavelength  $\leq 193$  nm (col. 1, lines 31-33);"

"a reticle plane (25; reticle) defined by a y-direction and an x-direction (fig. 2, where the Examiner interprets the x-y plane, where the x-direction is out of the page, and y is in the up-down direction of the drawing);"

"where said illumination system (10) illuminates said reticle plane (25) with said light beam (col. 4, lines 59-66), and

wherein said projection exposure system scans said reticle plane in said y-direction (the Examiner interprets the reticle (25) is in the x-y plane (where the x-

direction is out of the page). Therefore, the reticle (25) is scanned in the up-down direction, which is the y-direction)."

Koch et al. does not disclose "a carrier upon which said plate is arranged, for positioning said plate relative to said light beam."

However, Nojima teaches an XYZ mechanism configured to move an optical element in the X, Y, or Z direction (col. 5, lines 20-28; col. 10, lines 18-20). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the plate of Koch et al. by including a movable carrier utilized in a manner described above for at least the purpose to adjust radiation intensity as at least suggested by Koch et al. (col. 8, lines 52-55).

Regarding claim 30, Koch et al. further disclose "wherein said x-direction is substantially perpendicular to said y-direction (Fig. 2, the Examiner interprets, as stated above, the x-direction is in a plane out of the page. Therefore, the y-direction is in a plane substantially perpendicular to the x-direction, which would be in a plane parallel to the page).

Regarding claim 31, Koch et al. further disclose "wherein said light beam impinges onto plurality of raster elements (col. 5, lines 41-44), and said plurality of raster elements partition said light beam into a plurality of light bundles (col. 4, lines 28-30), and wherein said plurality of light bundles substantially overlap one another in said reticle plane (25)."

Regarding claim 34, Koch et al. further disclose "wherein at least one of said plurality of a raster elements (42) comprises an actuator for positioning said at least

one of said plurality of raster elements relative to said light beam (col. 5, lines 35-38).”

Regarding claim 35, Koch et al. further disclose “wherein said actuator changes an orientation of said raster element relative to said plate (col. 5, lines 35-38 and 57-59).” a reticle plane (col. 10, lines 24-25).”

Regarding claim 37, Koch et al. as modified further disclose the claimed limitations set forth in claims 27 and 31.

Regarding claim 38, Koch et al. further disclose “wherein at least one of said plurality of raster elements is adjustable to change said ring field of illumination in said reticle plane (col. 6, lines 66-67; col. 7, lines 1-2; col. 8, lines 52-54).”

Regarding claim 39, Koch et al. disclose the claimed limitations and further disclose “when adjusted to change said ring field of illumination in said reticle plane, also changes an illumination in an exit pupil of said illumination system (col. 10, lines 35-40).”

Regarding claims 40-42, Koch et al “wherein said at least one of said plurality of raster elements is “tiltable,” “displaceable” (col. 6 lines 21-24), and “replaceable (col. 5, lines 23-24, where any dimension of an array is preferred).”

Regarding claims 47 and 49, Koch et al. disclose all of the claimed limitations set forth in claim 27 and further disclose “a projection objective for imaging said object onto a light sensitive substrate (col. 4, lines 52-54 and 65-67).”

Regarding claim 48, Koch et al. further disclose “wherein said object is a pattern bearing mask (col. 2, lines 47-49).”

Regarding claims 50 and 55, Koch et al. as modified disclose the claimed limitations as set forth in claim 27. However, the plate in claim 27 is interpreted as a first plate and the plurality of raster elements as the first plurality of raster elements. Koch et al. further disclose "a second plate (fig. 4A, 50; convex base) having a second plurality of raster elements (52; facets) that receives said light beam from said first plurality of raster elements (see fig. 1, where light rays are directed from mirror array 16 (incorporates first plate) to mirror array 18 (incorporates second plate) wherein said second plate is in a fixed position (col. 4, lines 25-31, where the light is directed to form plurality of source images to corresponding facets. Thus, the second plate is not movable and is fixed)."

Regarding claims 51-54, Koch et al. further disclose wherein said plurality of raster elements is a plurality of reflective raster elements (col. 4, lines 25-26, where the light is reflected off the raster elements. Thus, the raster elements are reflective."

Regarding claim 56, Koch et al. further disclose "wherein said first plurality of raster elements (42) produces a plurality of images of a source of said light, and wherein said second plurality of raster elements (52) is situated at or near said plurality of images (col. 4, lines 27-31)."

4. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koch et al. in view of Nojima, as applied to claim 27 above, and in further view of Shiraishi

(US 2002/0196416). The teachings of Koch et al. and Nojima have been discussed above.

Regarding claim 32, Koch et al. as modified disclose a plate and a carrier, but does not disclose “wherein said plate is one of a plurality of plates arranged on said carrier.”

However, having a plurality of plates is known to the art as it is evident by the teaching of Shiraishi (see fig. 38, where a fly eye lens group 111A-B are on a movable member 112; [0234], lines 8-12). Thus, it would be obvious to one ordinary skilled in the art at the time the invention was made to further modify the carrier of Koch et al. as modified by including a plurality of plates in a manner described above for at least the purpose to select a desired illumination region.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and



any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

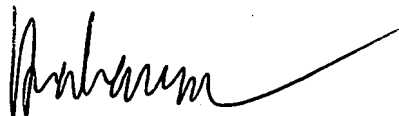
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Gutierrez  
Examiner  
Art Unit 2851

July 17, 2007



**HENRY HUNG NGUYEN**  
**PRIMARY EXAMINER**